

CLAIMS:

1. A data processing system defining a spatial arrangement of structural components relative to each other within an installation space, comprising:
 - a configuration tool;
 - a drawing module;
 - an input configured to input general parameters of a selected installation space into said configuration tool;
 - a database configured to store first data that defines a space-specific geometry of said selected installation space, and to then load said first data and display said first data in said drawing module, and to store second data that respectively geometrically defines structural components that are to be arranged in said selected installation space;
 - a processor configured to provide said second data together with said first data into said drawing module, to provide a rule set that defines at least customer-specific requirements of a customer for whom said structural components are to be arranged in said installation space, and to process said first data and said second data together according to said rule set in said configuration tool so as to automatically define a spatial arrangement of said structural components relative to each other within said installation space.
2. The system according to claim 1, wherein said processor further optimizes a configuration of said structural components relative to each other within said installation space with respect to at least one of a functional position of each one of said structural components and a quantity of said structural components arranged in said installation space.
3. The system according to claim 1, wherein said processor further carries out a functional and data analysis so as to mathematically describe said structural components and to mathematically represent said structural components according to position rules.

4. The system according to claim 1, further comprising a document generating tool including a processing program, and said processor further uses said generating tool and generates production documents including at least one of drawings, parts lists, materials lists, video preliminary examinations, plotter plans, installation plans, production plans, and production contracts, corresponding to said spatial arrangement defined by said processor.

5. The system according to claim 4, wherein said production documents include said drawings, and said processor further transfers drawing data representing said drawings via a plot script from said document generating tool to a computer aided design (CAD) output system that outputs said drawings.

6. The system according to claim 4, wherein said processor further transfers said production documents via an interface from said document generating tool to a technical administrative system.

7. The system according to claim 6, wherein said technical administrative system comprises a production planning system.

8. The system according to claim 1, wherein said selected installation space comprises at least one partial space within an aircraft cabin of a selected aircraft type.

9. The system according to claim 8, wherein said at least one partial space within said aircraft cabin comprises a service channel in said aircraft cabin, said structural components to be installed in said service channel include any one or more of passenger service units, lights, air vents, loudspeakers, oxygen supply units, video monitors, informational displays, and control switches.

10. The system according to claim 9, wherein said database is further configured to store third data that respectively defines additional cabin outfitting components including one or more of galleys, toilets, storage cabinets, passenger seats and baggage compartments arranged according to a customer-specified cabin layout, and wherein said processor further processes said third data together with said first data and said second data according to said rule set to define said spatial arrangement

of said structural components.

11. The system according to claim 10, wherein said database is further configured to store fourth data that respectively defines surrounding components including one or more of cabin dividers, baggage compartments, video monitors, and display screens of which the arrangement will limit the possible range of variants of said spatial arrangement, and wherein said processor further processes said fourth data together with said first data, said second data and said third data according to said rule set to define said spatial arrangement of said structural components.

12. The system according to claim 11, wherein said surrounding components include said baggage compartments, which further serve as carriers for equipment and for electrical interfaces of said service channel.

13. The system according to claim 12, wherein said fourth data define said baggage compartments as a row of successive ones of said baggage compartments, and wherein said processor automatically adapts said fourth data defining said row of baggage compartments according to said rule set.

14. The system according to claim 10, wherein said third data is selected and read out from a cabin outfitting component reference database in which said third data are stored among data defining plural different available cabin outfitting components.

15. The system according to claim 9, wherein said database stores said second data in a component reference database that contains data defining plural different available structural components, and wherein said second data is selected and read out from said component reference database.

16. The system according to claim 9, wherein said at least one partial space within said aircraft cabin further comprises another space other than said service channel in said aircraft cabin, and wherein said processor further defines a spatial arrangement of other components within said another space.

17. The system according to claim 8, wherein said database loads a data set defining a customer-approved preliminary cabin layout into said data processing system through a data input interface.

18. The system according to claim 1, wherein said database stores said second data in at least one reference database that contains parametric data defining various different structural components.

19. The system according to claim 1, wherein said installation space is a space within a transport vehicle other than an aircraft.

20. The system according to claim 1, wherein said installation space is an industrial plant, and said arrangement of structural components forms assembled equipment in said plant.

21. A data processing system defining a spatial arrangement of structural components relative to each other within an installation space, comprising:

means for configuring aspects of said structural components and said installation space;

means for drawing aspects of said structural components and said installation space;

means for inputting general parameters of a selected installation space into said means for configuring;

means for storing first data that defines a space-specific geometry of said selected installation space, and to then load said first data and display said first data in said means for drawing, and to store second data that respectively geometrically define structural components that are to be arranged in said selected installation space;

means for processing for providing said second data together with said first data into said means for drawing, for providing a rule set that defines at least customer-specific requirements of a customer for whom said structural components are to be arranged in said installation space, and for processing said first data and said second data together according to said rule set in said means for configuring so as to automatically define a spatial arrangement of said structural components relative to each other within said installation space.

22. The system according to claim 21, wherein said means for processing further optimizes a configuration of said structural components relative to each other within said installation space with respect to at least one of a functional position of each one of said structural components and a quantity of said structural components arranged in said installation space.

23. The system according to claim 21, wherein said means for processing further carries out a functional and data analysis so as to mathematically describe said structural components and to mathematically represent said structural components according to position rules.

24. The system according to claim 21, further comprising means for generating a document including a processing program, and said means for processing further uses said means for generating and generates production documents including at least one of drawings, parts lists, materials lists, video preliminary examinations, plotter plans, installation plans, production plans, and production contracts, corresponding to said spatial arrangement defined by said means for processing.

25. The system according to claim 24, wherein said production documents include said drawings, and said means for processing further transfers drawing data representing said drawings via a plot script from said document generating tool to a computer aided design (CAD) output system that outputs said drawings.

26. The system according to claim 24, wherein said means for processing further transfers said production documents via an interface from said document generating tool to a technical administrative system.

27. The system according to claim 26, wherein said technical administrative system comprises a production planning system.

28. The system according to claim 21, wherein said selected installation space comprises at least one partial space within an aircraft cabin of a selected aircraft type.

29. The system according to claim 28, wherein said at least one partial space within said aircraft cabin comprises a service channel in said aircraft cabin, said structural components to be installed in said service channel include any one or more of passenger service units, lights, air vents, loudspeakers, oxygen supply units, video monitors, informational displays, and control switches.

30. The system according to claim 29, wherein said means for storing further stores third data that respectively defines additional cabin outfitting components including one or more of galleys, toilets, storage cabinets, passenger seats and baggage compartments arranged according to a customer-specified cabin layout, and wherein said means for processing further processes said third data together with said first data and said second data according to said rule set to define said spatial arrangement of said structural components.

31. The system according to claim 30, wherein said means for storing further stores fourth data that respectively define surrounding components including one or more of cabin dividers, baggage compartments, video monitors, and display screens of which the arrangement will limit the possible range of variants of said spatial arrangement, and wherein said means for processing further processes said fourth data together with said first data, said second data and said third data according to said rule set to define said spatial arrangement of said structural components.

32. The system according to claim 31, wherein said surrounding components include said baggage compartments, which further serve as carriers for equipment and for electrical interfaces of said service channel.

33. The system according to claim 32, wherein said fourth data define said baggage compartments as a row of successive ones of said baggage compartments, and wherein said means for processing automatically adapts said fourth data defining said row of baggage compartments according to said rule set.

34. The system according to claim 30, wherein said third data is selected and read out from a cabin outfitting component reference database in which said third data

are stored among data defining plural different available cabin outfitting components.

35. The system according to claim 29, wherein said means for storing stores said second data in a component reference database that contains data defining plural different available structural components, and wherein said second data is selected and read out from said component reference database.

36. The system according to claim 29, wherein said at least one partial space within said aircraft cabin further comprises another space other than said service channel in said aircraft cabin, and wherein said means for processing further defines a spatial arrangement of other components within said another space.

37. The system according to claim 28, wherein said means for storing loads a data set defining a customer-approved preliminary cabin layout into said data processing system through a data input interface.

38. The system according to claim 21, wherein said means for storing stores said second data in at least one reference database that contains parametric data defining various different structural components.

39. The system according to claim 21, wherein said installation space is a space within a transport vehicle other than an aircraft.

40. The system according to claim 21, wherein said installation space is an industrial plant, and said arrangement of structural components forms assembled equipment in said plant.